

## **Optimized conditions for graft copolymerization of poly(acrylamide) onto rubberwood fibre.**

### **ABSTRACT**

Graft copolymerization of acrylamide (Am) onto rubberwood fibre (RWF) was carried out by free radical initiation. Ceric ammonium nitrate was used as an initiator system. The effects of temperature, dose of initiator, ratio of monomer to fibre, and nitric acid concentration, on the grafting percentage were investigated. The optimum reaction temperature was found to be about 50°C for 4h and with an appropriate ratio of monomer to fibre of 3:1 wt/wt. The optimum concentration of initiator and nitric acid were 0.007 M and 0.2 M, respectively. The polyacrylamide (PAm) homopolymer was removed from the graft copolymer by Soxhlet extraction using distilled water. The pre-treatment RWF before the grafting procedure showed that grafting of acid-treated had a higher efficiency than alkali- treated and untreated RWF. Fourier transform infrared spectroscopy was used to confirm and characterize the PAm-graft-RWF.

**Keyword:** Rubberwood fibre; Acrylamide; Lignocellulose; Graft copolymerization.